



## **Using SAP Crystal Reports with SAP Sybase SQL Anywhere**

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## INTRODUCTION

This document describes how to display data stored in an **SAP Sybase SQL Anywhere** database using **SAP Crystal Reports**. The document shows how to create a simple report that displays selected data from a table and an advanced report showing how to add data in the report using SQL queries. The document also shows how to format the data inside charts and maps, which can be used to graphically enhance the report.

For the remainder of this document, **SAP Sybase SQL Anywhere** is referred to as “**SQL Anywhere**” and **SAP Crystal Reports** is referred to as “**Crystal Reports**”.

This paper was written using **SQL Anywhere 12.0.1** and **Crystal Reports 2011**; however, its contents are applicable to other versions.

## REQUIREMENTS

This document assumes that the user is familiar with **SQL Anywhere** and **Crystal Reports** and has both products installed on his/her environment. For consistency and simplicity, all the examples throughout the document use the SQL Anywhere sample database, **demo.db**. By default, this database is installed in the SQL Anywhere samples directory: *C:\Documents and Settings\All Users\Documents\SQL Anywhere 12\Samples*.

Evaluation copies of SQL Anywhere and Crystal Reports can be downloaded from these locations:

- **SAP Sybase SQL Anywhere**  
<http://scn.sap.com/docs/DOC-31795>
- **SAP Crystal Reports**  
<http://www.sap.com/solutions/sme/business-intelligence-crystal-solutions/sap-crystal-reports/index.epx>

## CONNECTING TO SQL ANYWHERE WITH CRYSTAL REPORTS

1. Launch Crystal Reports. **Start ► Programs ► Crystal Reports 2011 ► Crystal Reports 2011**. The following screen appears.

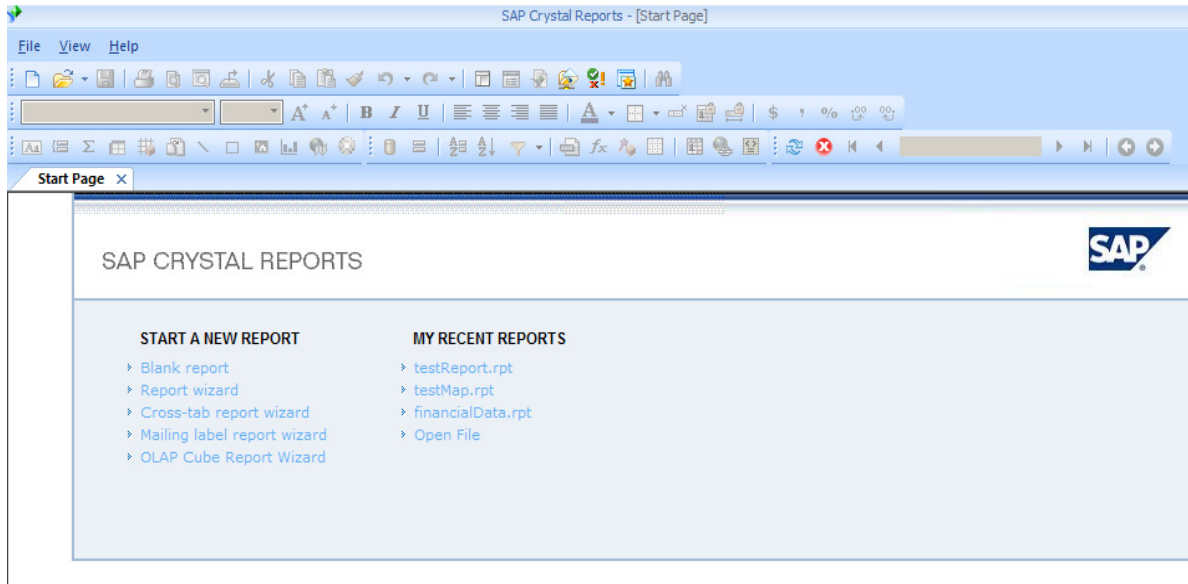


Figure 1: Startup screen

2. Click **Report Wizard**. The **Standard Report Creation Wizard** screen appears.

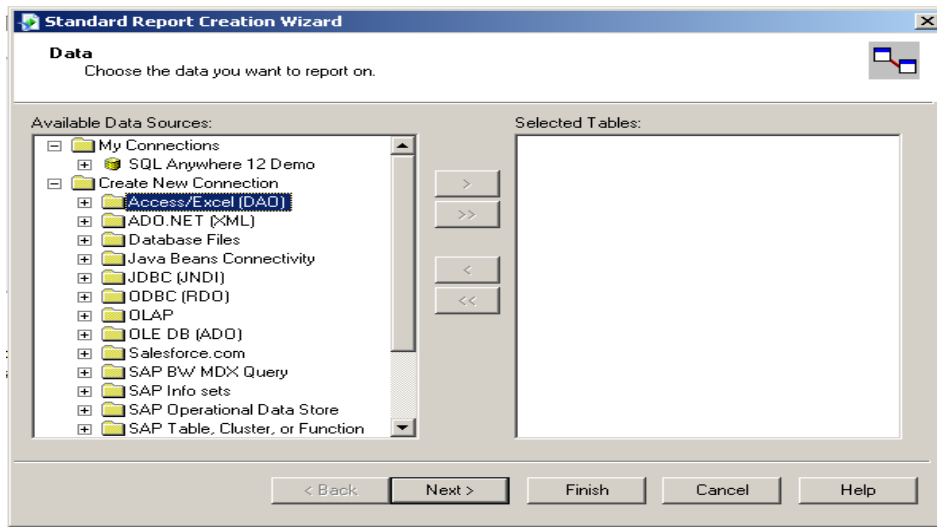


Figure 2: Standard Report Creation Wizard

Crystal Reports asks for the type of database connection to create. Double-click on **ODBC (RDO)**. Select the ODBC Data Source Name “**SQL Anywhere 12 Demo**” and click **Next**.

3. Enter the database credentials and click **Finish** to add the connection. For the **demo.db** database, use the following credentials.

**User ID:** dba  
**Password:** sql

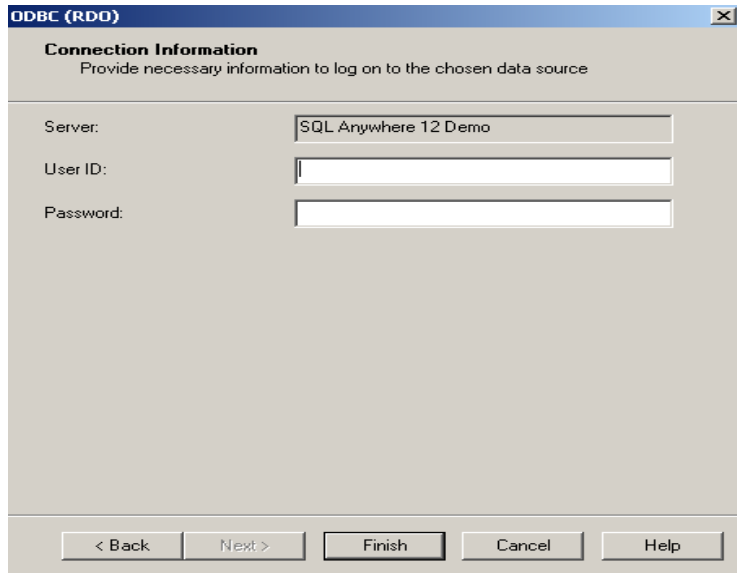


Figure 3: ODBC connection

4. Crystal Reports shows the database connection under **My Connections**.

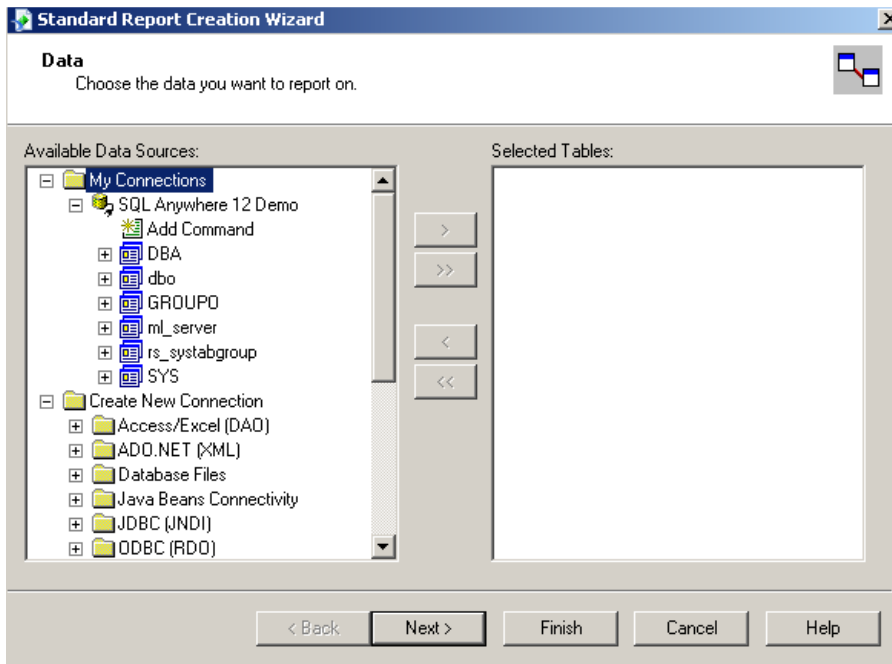


Figure 4: SQL Anywhere connection with Crystal Reports

5. We are connected to the database. We can now select tables and include them in our report. Click **Finish** to start creating a Crystal Report using data stored inside the SQL Anywhere database.

## CREATING A SIMPLE REPORT

This section describes how to create a simple report displaying data from the Contacts table of the sample SQL Anywhere database.

### Adding Data to Crystal Reports

1. Click **File ► New ► Standard Report** to open the **Standard Report Creation Wizard**.
2. Expand “**SQL Anywhere 12 Demo**” and double-click the Contacts Table from **GROUPO | Tables**. Click **Next**.

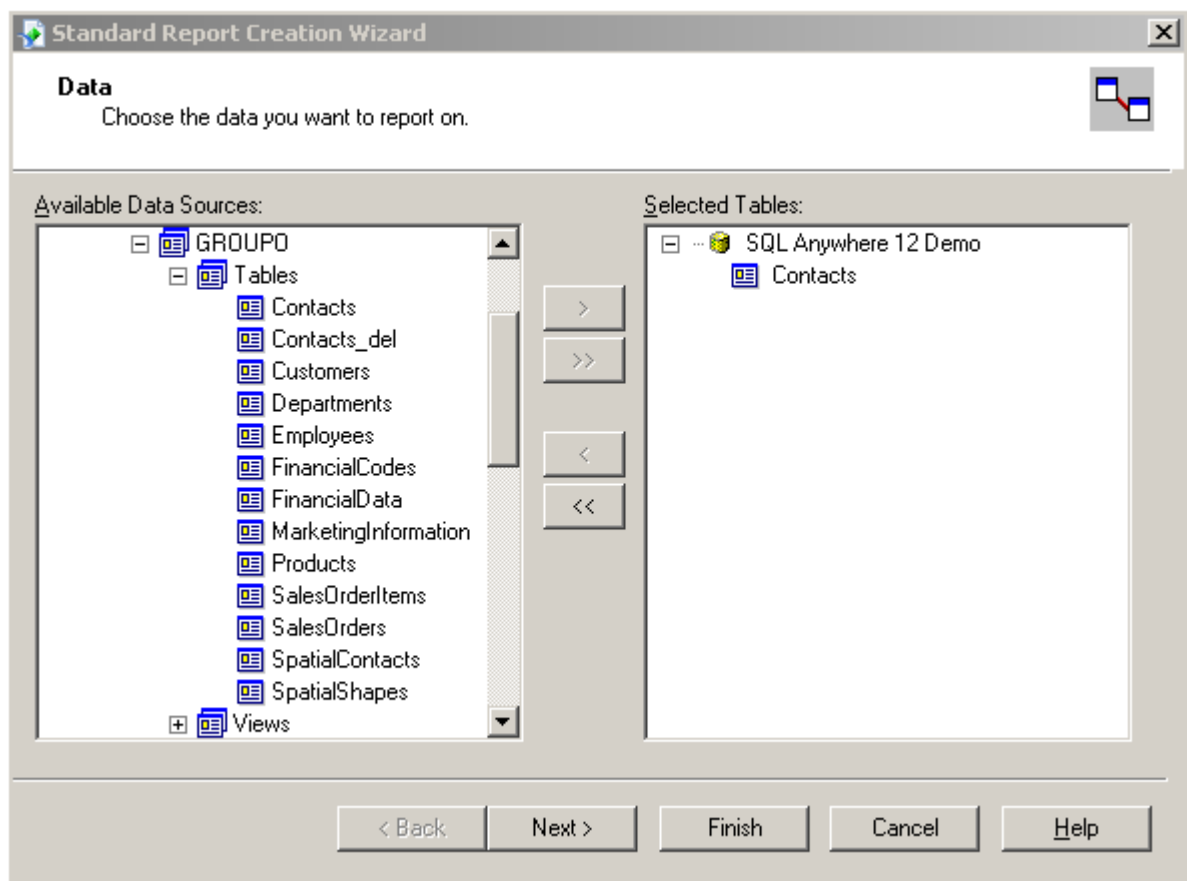


Figure 5: Selecting data from the SQL Anywhere database

3. The Wizard asks to choose the information to display on the report. Select **GivenName**, **Surname**, **State** and **Country**. Click **Finish**.

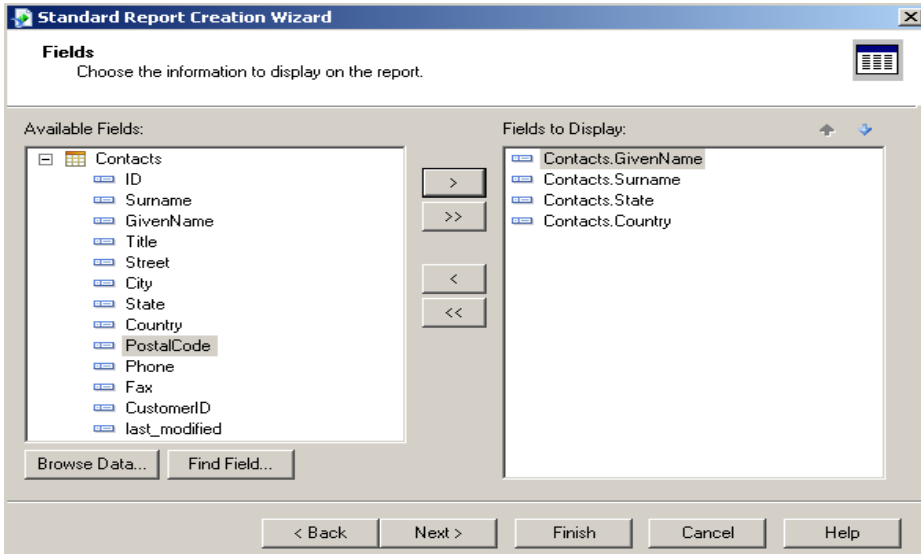


Figure 6: Selecting fields to display in the report

- Crystal Reports displays **GivenName**, **Surname**, **State** and **Country** columns from the **Contacts** table. We saw how to add data to Crystal Reports, now let's format our report by grouping **Contacts** based on **Country** and **State**.

### Formatting Records in Crystal Reports

This section describes how to group contacts based on Country and State.

- Open Group Expert. Click on **Report ► Group Expert**.
- Select Group by **Contacts.Country** and **Contacts.State** and click **OK**.

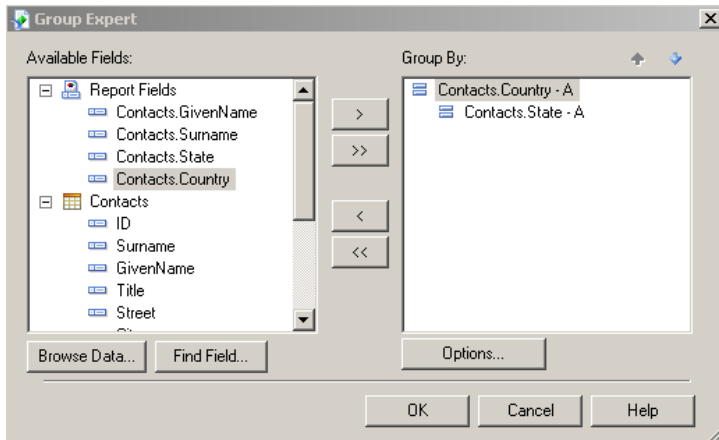


Figure 7: Group Expert

- Crystal Report groups the data based on **Country** and **States**.



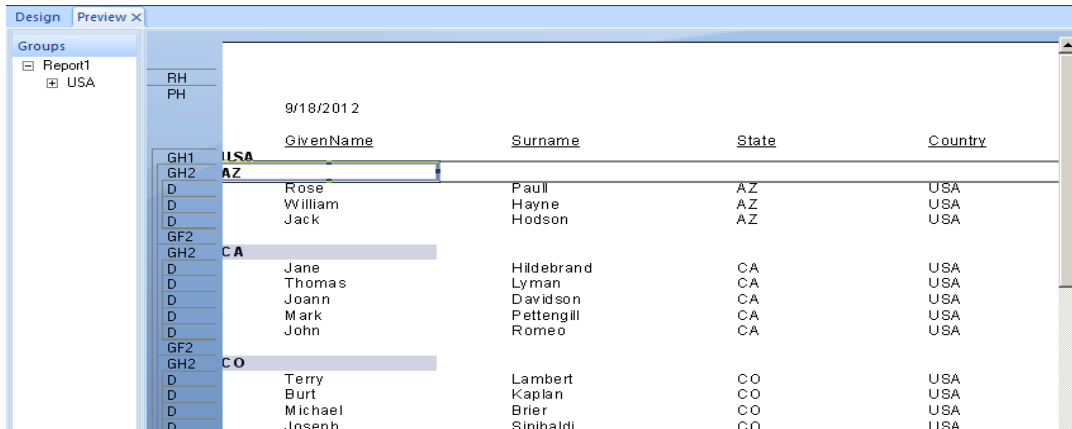


Figure 8: Simple Crystal Report

### Displaying Records on a Map in Crystal Reports

Crystal Reports provides a tool called “**Map Expert**” that will allow you to set the type of map, data and other options to help you render a map in the report.

1. To insert a map, click on **Insert ► Map**.
2. In the Data tab, select State in the **Geographic field** and **On change of** fields. Select State in the **Map values** field. Click **OK**.

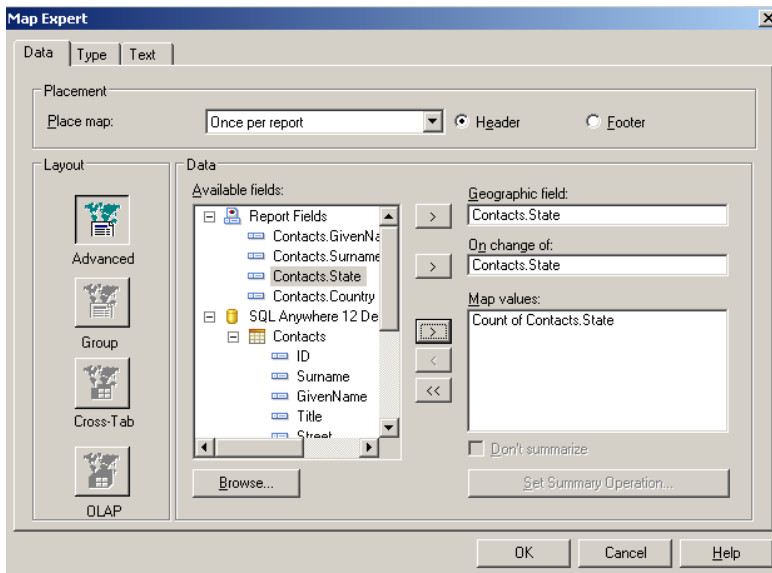


Figure 9: Map Expert

3. Crystal Reports adds the map showing contacts in different states to the header of the report.

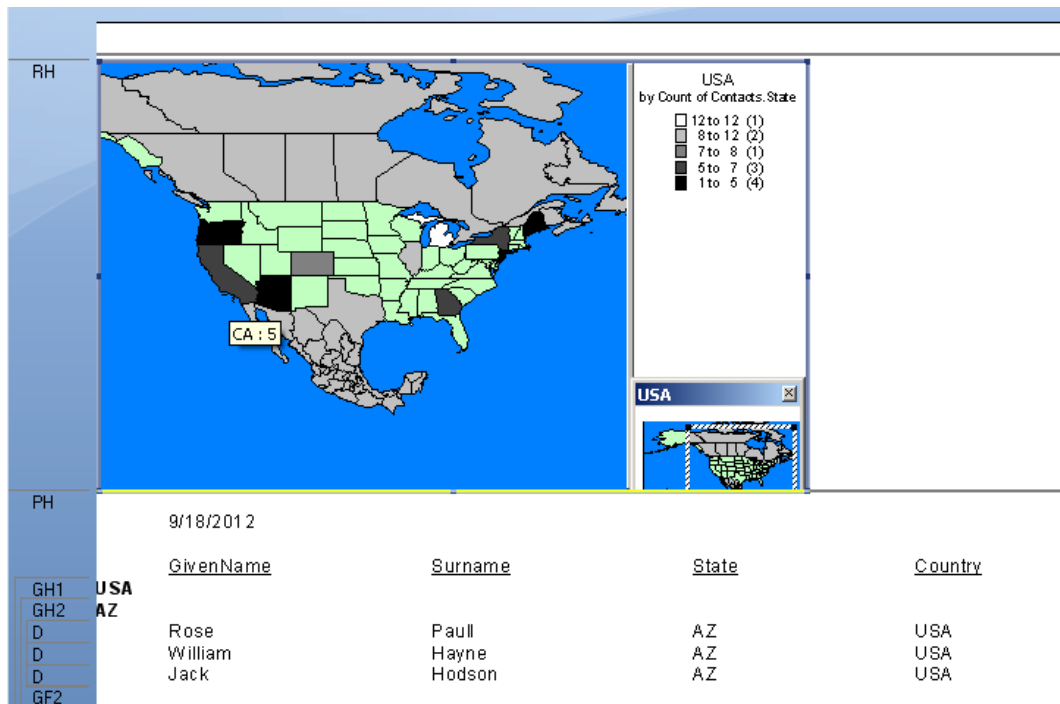


Figure 10: Crystal Report with Map

Moving the mouse pointer over the states in the map shows the sum of the contacts in that particular state.

### ADDING DATA TO CRYSTAL REPORTS USING A SQL QUERY

This section describes how to add data by querying the database. In Crystal Reports, this can be done by adding a command using **Database Expert**. We will create an **Expenses and Revenues** report of different years using data from the **FinancialCodes** and **FinancialData** tables.

1. Open the **Standard Report Creation Wizard** to create report.
2. Expand **SQL Anywhere 12 Demo** under My connections from the available data sources.

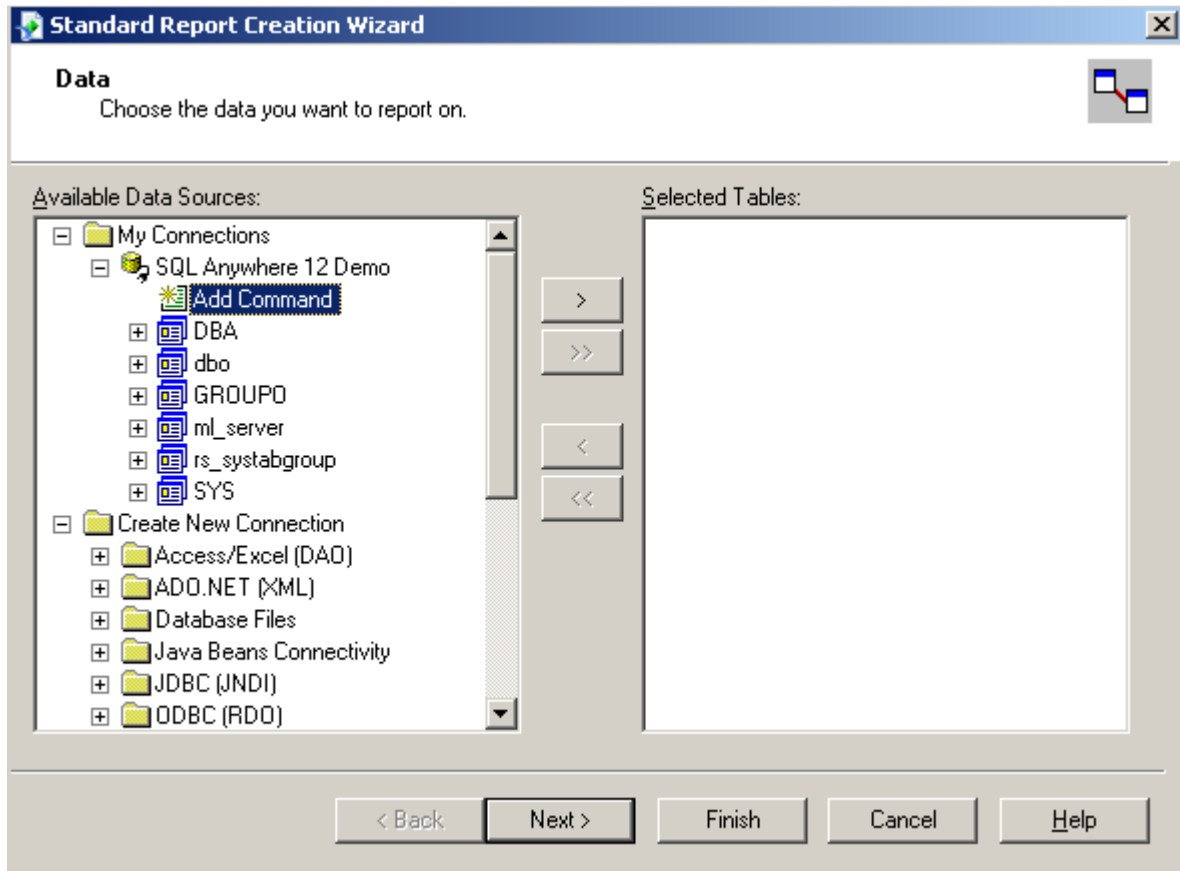


Figure 11: Adding command to Crystal Report

3. Double-click on **Add Command** and enter following SQL query:

```
Select GROUP0.FinancialData.Year, GROUP0.FinancialData.Quarter as Quarter,
GROUP0.FinancialData.Amount,
(GROUP0.FinancialCodes.Type + ' - ' + GROUP0.FinancialCodes.Description) as
Description FROM FinancialData
Inner Join FinancialCodes
ON GROUP0.FinancialData.Code = GROUP0.FinancialCodes.Code
where GROUP0.FinancialData.Year = {?year_sales};
```

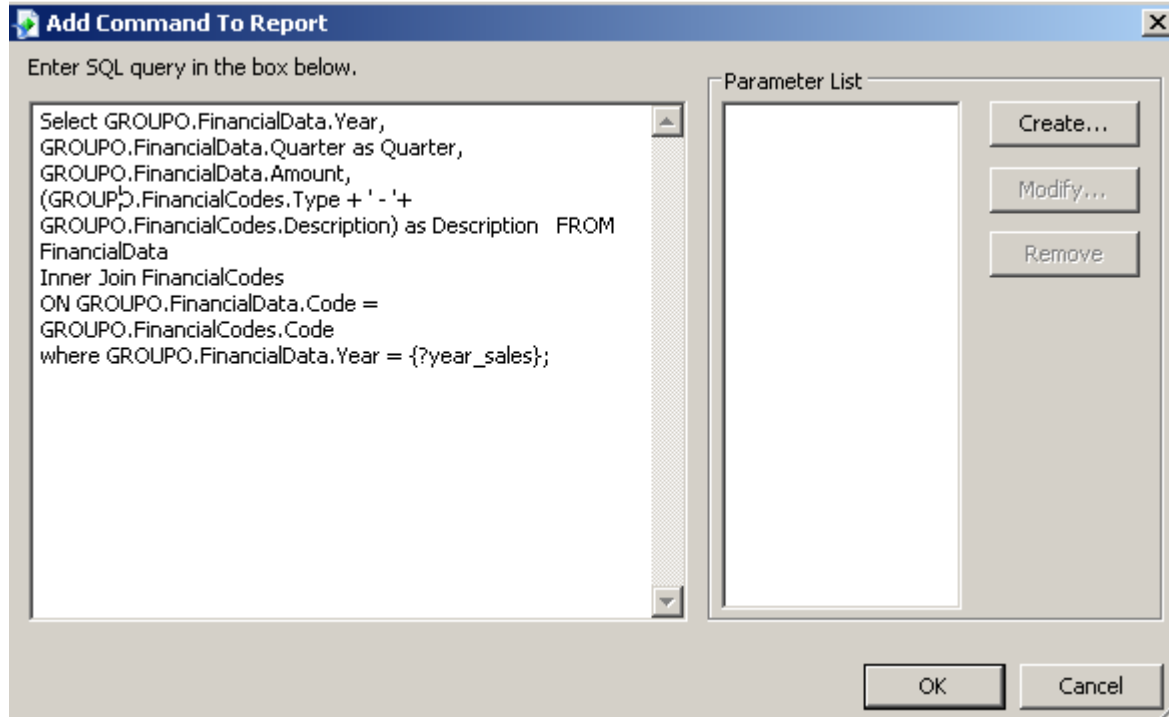


Figure 12: Adding a command SQL query

Here we are selecting **Year**, **Quarter**, and **Amount** from the **FinancialData** table, and **Type**, **Description** from the **FinancialCodes** table. At the end of our query we have a **WHERE** clause with the parameter **year\_sales**, filtering the data based on the year.

4. To create our **year\_sales** parameter, click on the **Create** button in the **Parameter List** section. Enter "**year\_sales**" and "**Enter the year**" in the Parameter Name and Prompting Text fields respectively. Choose the Value Type of the parameter, select String for **year\_sales** and click **OK**.

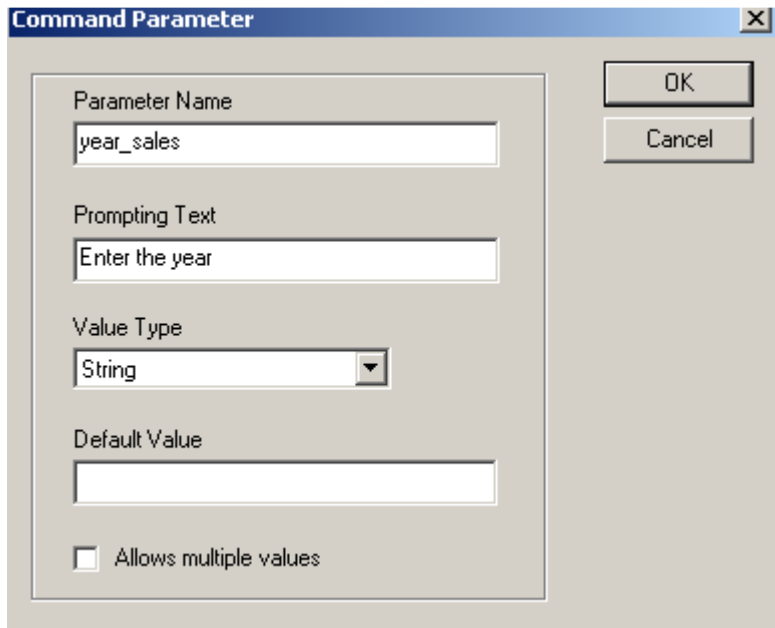


Figure 13: Adding parameters to the command

Now we can see the **year\_sales** parameter added in the **Parameter List**.

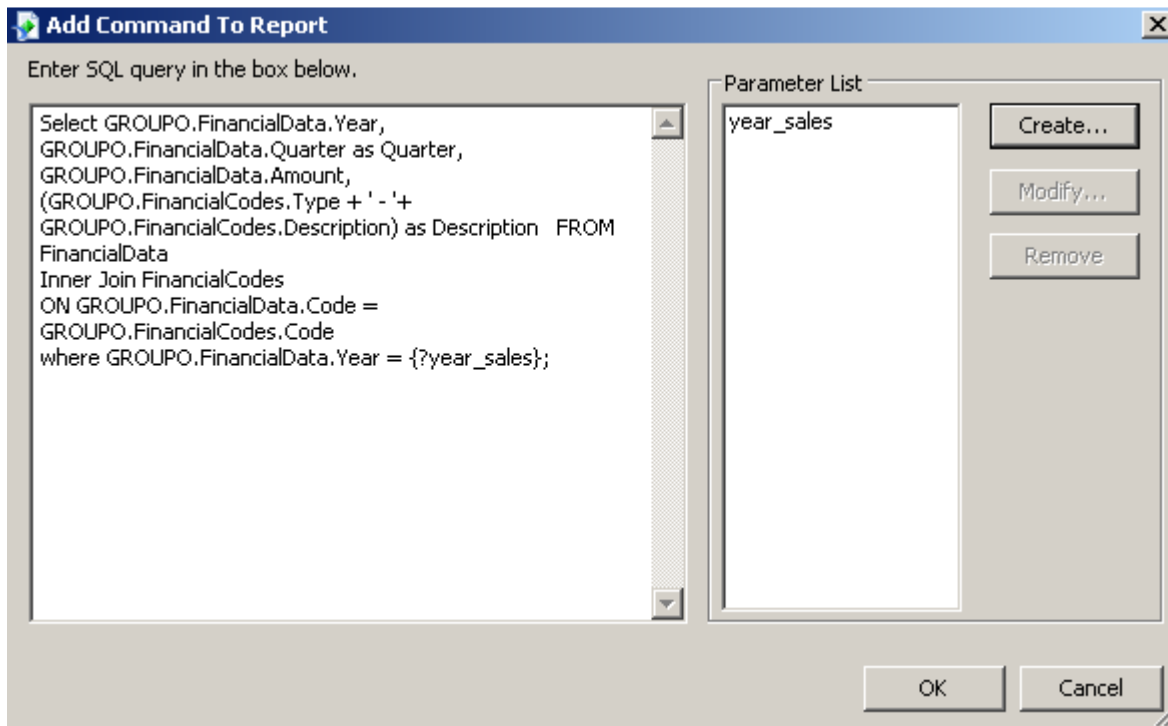


Figure 14: Command parameter added in Parameter List

5. Click **OK** to add the **command** to the report. Crystal Reports asks you to enter the parameter values with our prompt text **“Enter the year”**. Enter **“2000”** and then click **OK** to enter the parameter value.

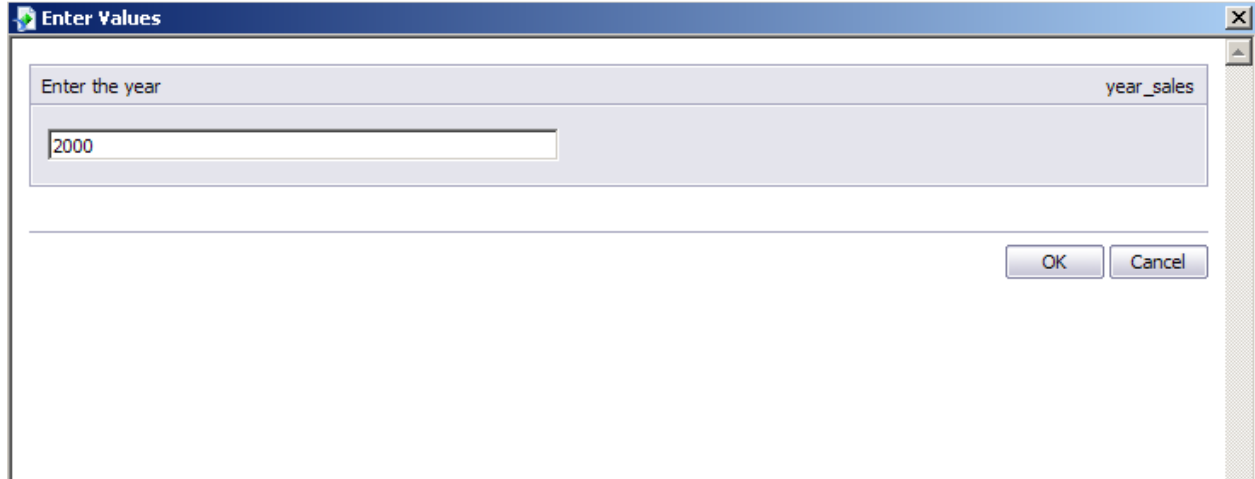


Figure 15: Entering command parameter values

6. Now we can see our **Command** added in **Selected Tables**. Click **Next**.

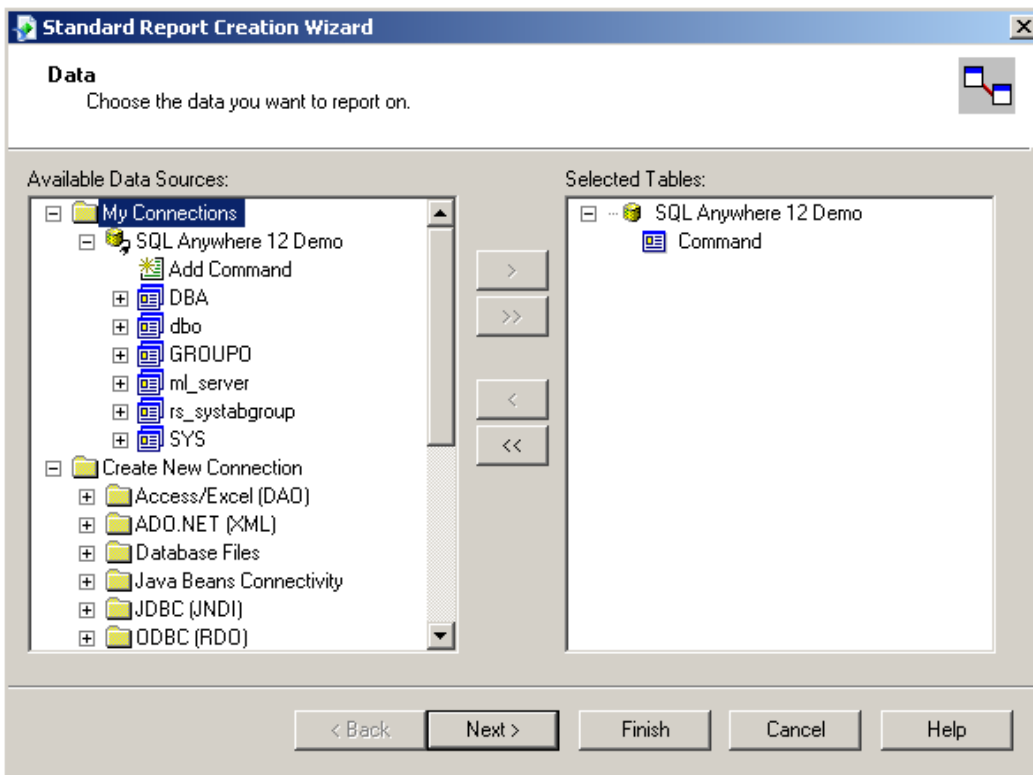


Figure 16: Command Added to Report

7. Choose **Description**, **Amount** as the fields to Display and click **Finish** to create the report. Group the report by **Quarter**. Refer to section “**Formatting Records in Crystal Reports**” above for more information on how to group records. Crystal Reports generates the report showing **year 2000** data grouped by each **quarter**.

9/19/2012		
	<u>Description</u>	<u>Amount</u>
<b>Q1</b>	expense - Fees	153.00
	expense - Services	643.00
	expense - Sales & Marketing	2,478.00
	expense - R & D	1,051.00
	expense - Administration	523.00
	revenue - Fees	3,114.00
	revenue - Services	992.00
<b>Q2</b>	expense - Fees	149.00
	expense - Services	687.00
	expense - Sales & Marketing	2,998.00
	expense - R & D	1,158.00
	expense - Administration	749.00
	revenue - Fees	3,998.00
	revenue - Services	1,195.00
<b>Q3</b>	expense - Fees	157.00
	expense - Services	222.00

Figure 17: Crystal Report Generated Using Command Data

Now let's insert a chart in the footer of our report to graphically display the expenses and revenues data.

### Inserting a Chart Displaying Queried Data

1. Click **Insert ► Chart** to insert a chart in report. This opens up **Chart Expert**.
2. Select the type of chart from the **Type** tab. We will select a **Line** chart.

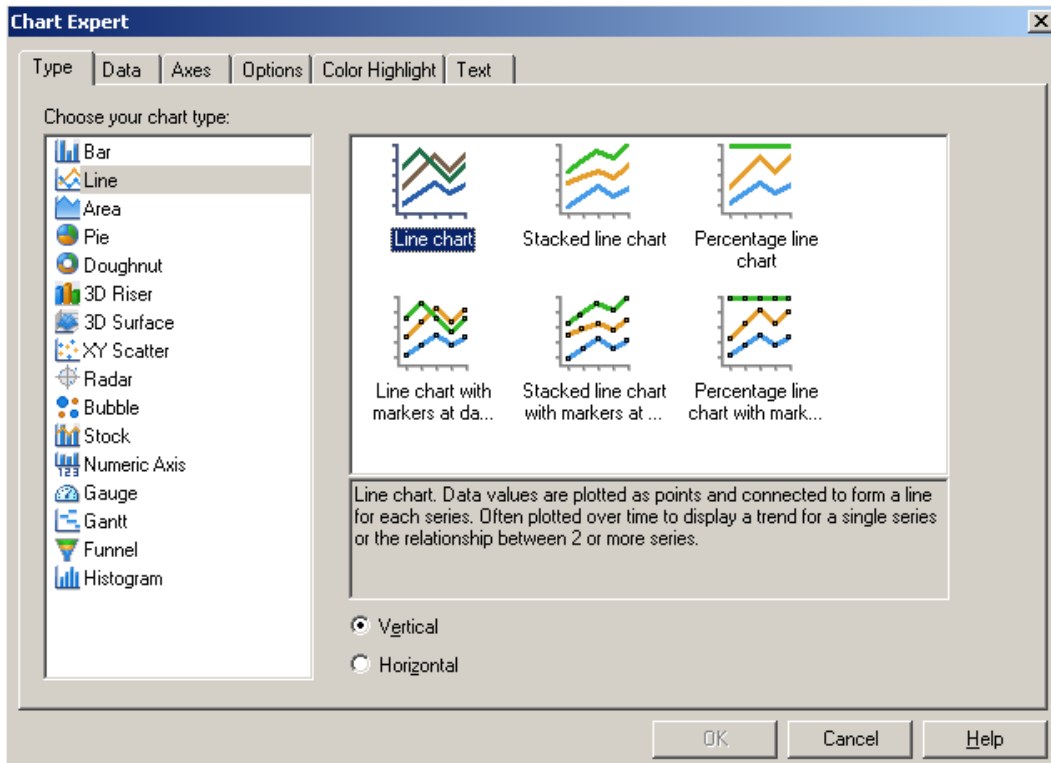


Figure 18: Chart Expert line graph

- From the **Data** tab, select **Advanced** as **Layout**. In the Data section, choose **Quarter** and **Description** in **On change of** field and select **Amount** in the **Show value** field.

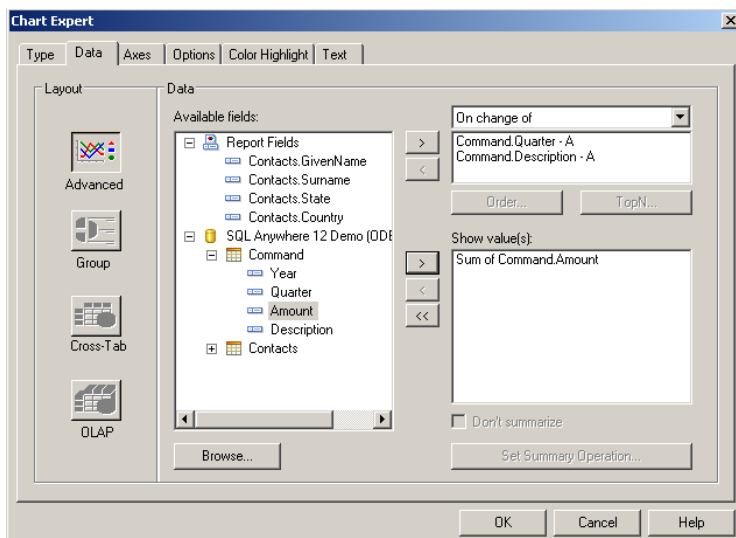


Figure 19: Selecting line graph data



- From the **Text** tab, change the **Title** to **Expenses and Revenues**, **Group title** to **Quarter** and **Data title** to **Total Amount**. Click **OK** to create a line graph.

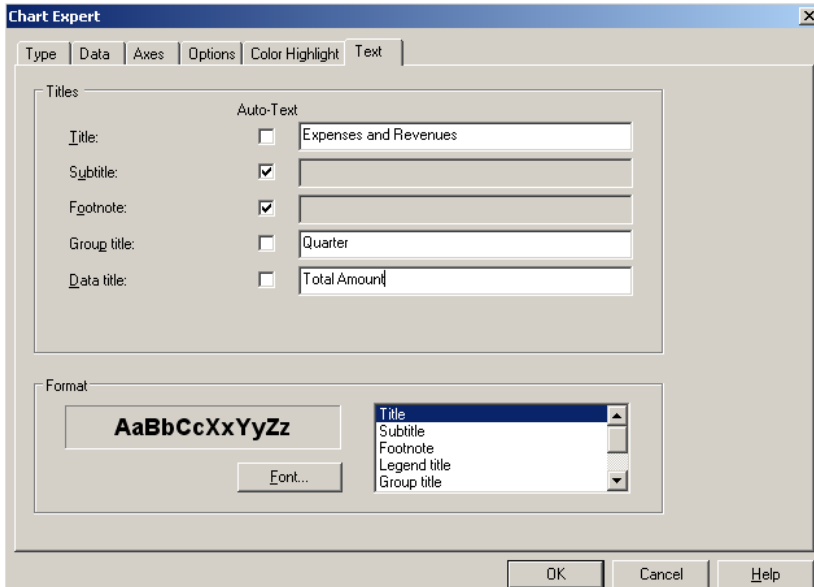


Figure 20: Chart Expert titles

- Right-click the chart and select **Chart Options** to change the appearance of the chart. From the **Appearance** tab, select **Markers and Lines** in **Line Style** and **X-shape** as **Shape** respectively.

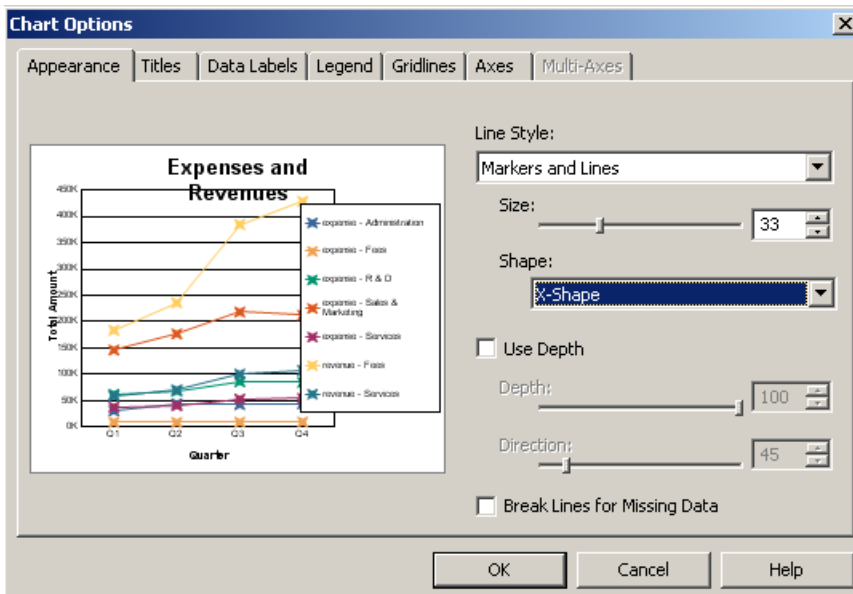


Figure 21: Chart Options Appearance tab

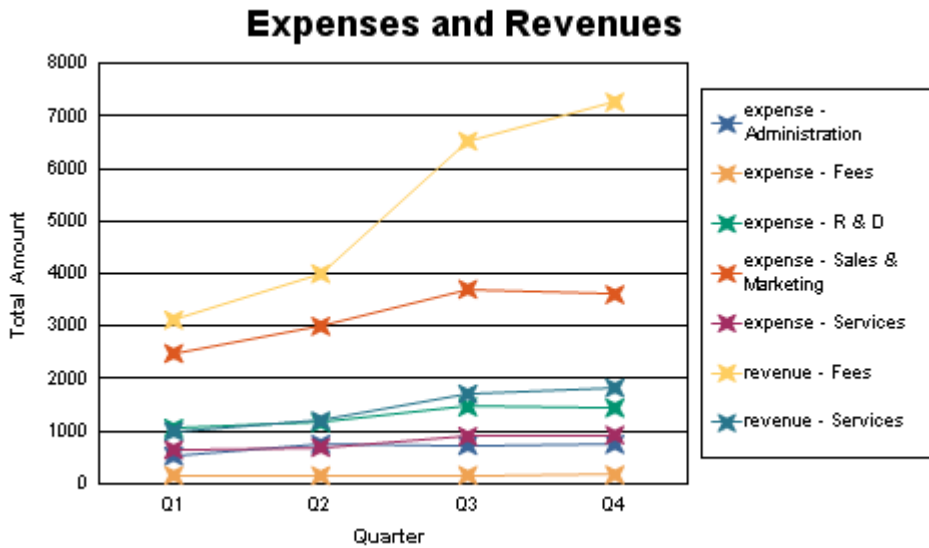


Figure 22: Crystal Reports generated line chart

We have a line graph displaying the expenses and revenues for the year. Crystal Reports provides an easy way to display the report graphically using a variety of charts.

### CREATING A SALES REPORT

In this section we are going to create a sales report with a bar chart showing yearly sales of the products, a pie chart showing overall sales of products, and a cross table showing sales of products based on different regions.

#### Selecting the Data for the Report

Select the **Products**, **SalesOrders**, and **SalesOrderItems** tables and create a report. Now we want to show yearly sales of the products, but we do not have any data column in the database specifying the year of the sales. We can get the year from the **ShipDate** field in the **SalesOrders** table. To do this we need to create a `getYear` formula that extracts the year from **ShipDate**.

#### Creating Formulas

1. To add formulas, right-click on **Formula Fields** from the **Field Explorer** and select **New**. Enter the Formula name as `getYear`. This opens up the Formula Editor.

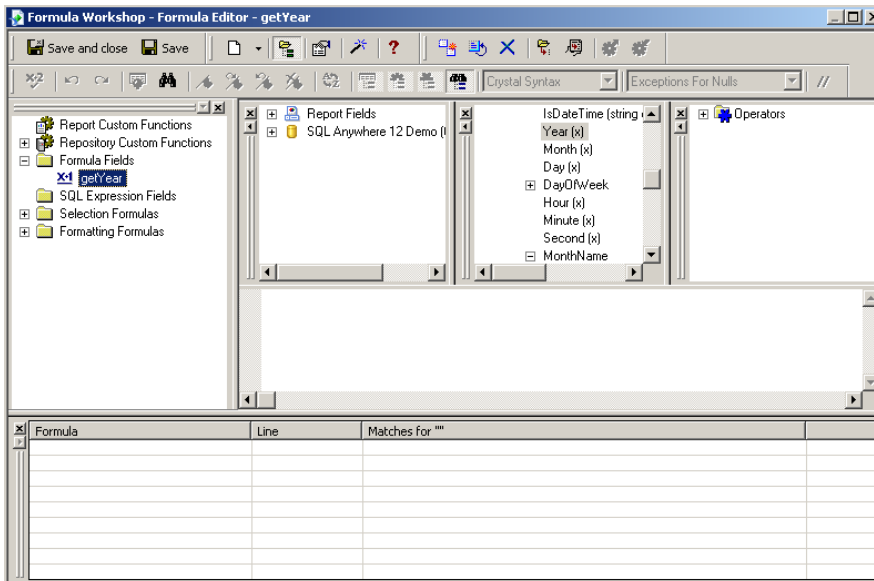


Figure 23: Formula Editor

- Expand **Date and Time Functions** under **Functions** and select the **Year(x)** function. Select **ShipDate** from the **SalesOrderItems** as function parameter. To remove the decimal places from the year, convert year to text by passing it to the **Totext** function with 0 decimal places. Save the formula and close it.

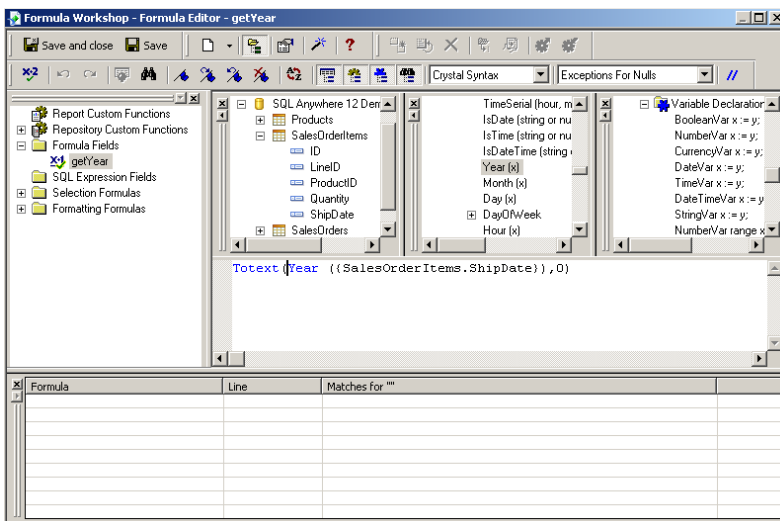


Figure 24: Formula to Get Year From ShipDate

Now we have the year data in our report. Let's insert a bar chart showing yearly sales of the products.

Inserting a Bar Chart Showing Yearly Sales

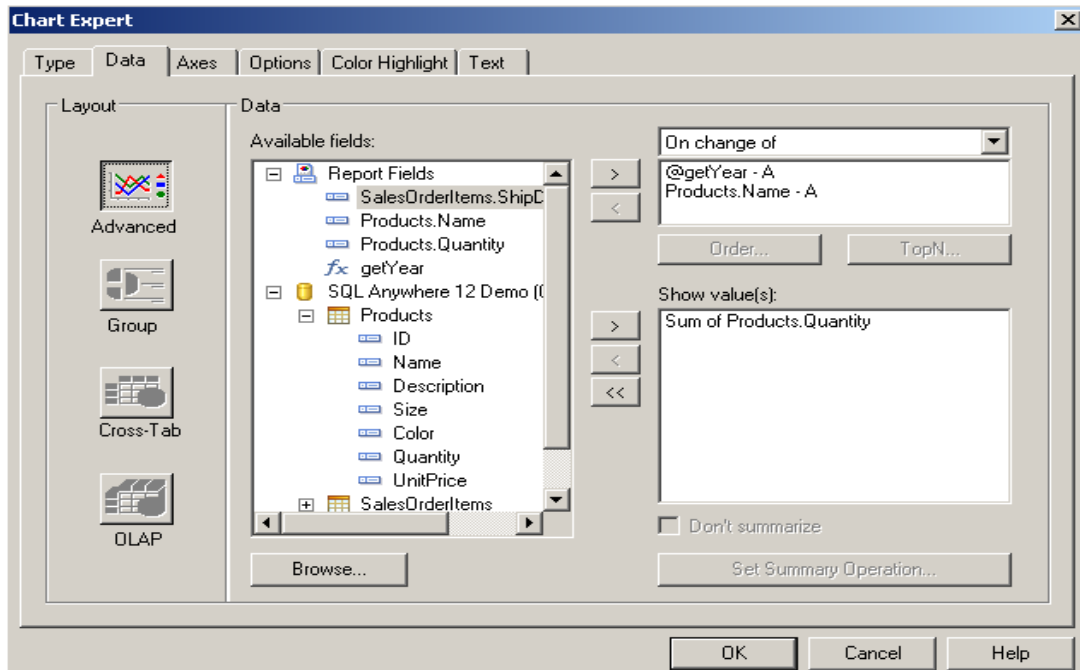


Figure 25: Creating a bar chart

Crystal Reports generates the bar chart showing yearly sales of products.

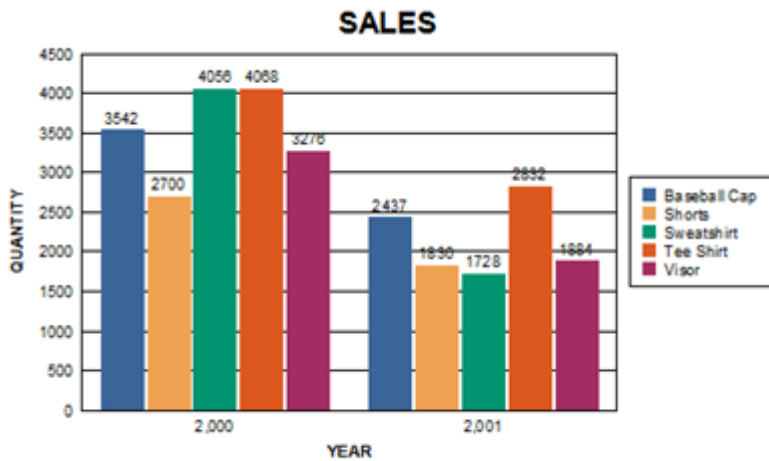


Figure 26: Crystal Reports Generated Bar Chart

**Creating a Cross Table Showing Sales of Products Based on Different Regions**

1. Group the report by **Products.Name**.
2. Switch to the design view of the report and insert a cross table (**Insert ► Cross Tab**) in the group header.
3. Open the **Cross-Tab expert** (right click **Cross Tab ► Cross - Tab Expert**).
4. In the Cross-Tab tab, add the data to display.
5. We will display **Region** as the column, **Product.Name** as the rows and **SalesOrderItems.Quantity** in summarized fields. As we have only one row, check **Suppress Column Grand Totals** and click **OK**. From the **Styles** tab, you can change the display of the cross-tab. Click **OK** to create a cross table showing sales of products in different regions.

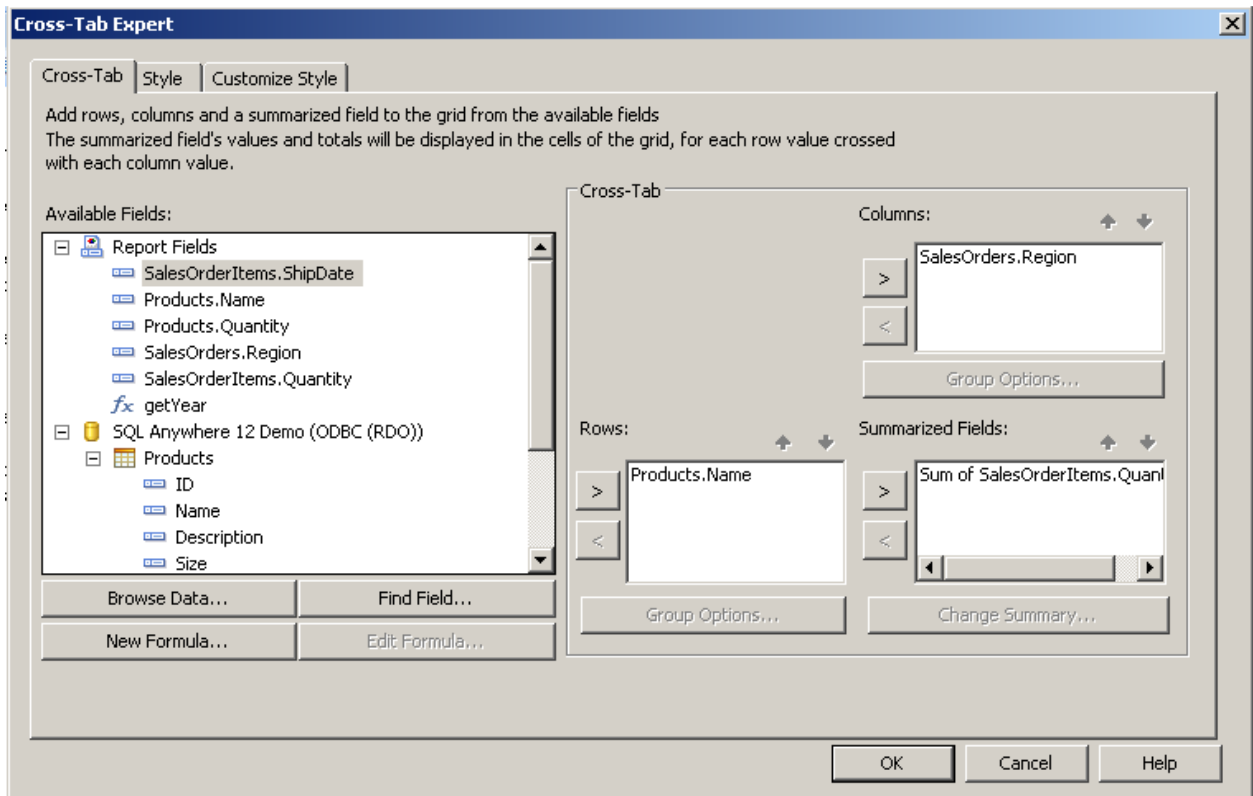


Figure 27: Cross- Tab Expert

- Now let's add a products photo besides the product's cross table. The generated report so far looks as the following:

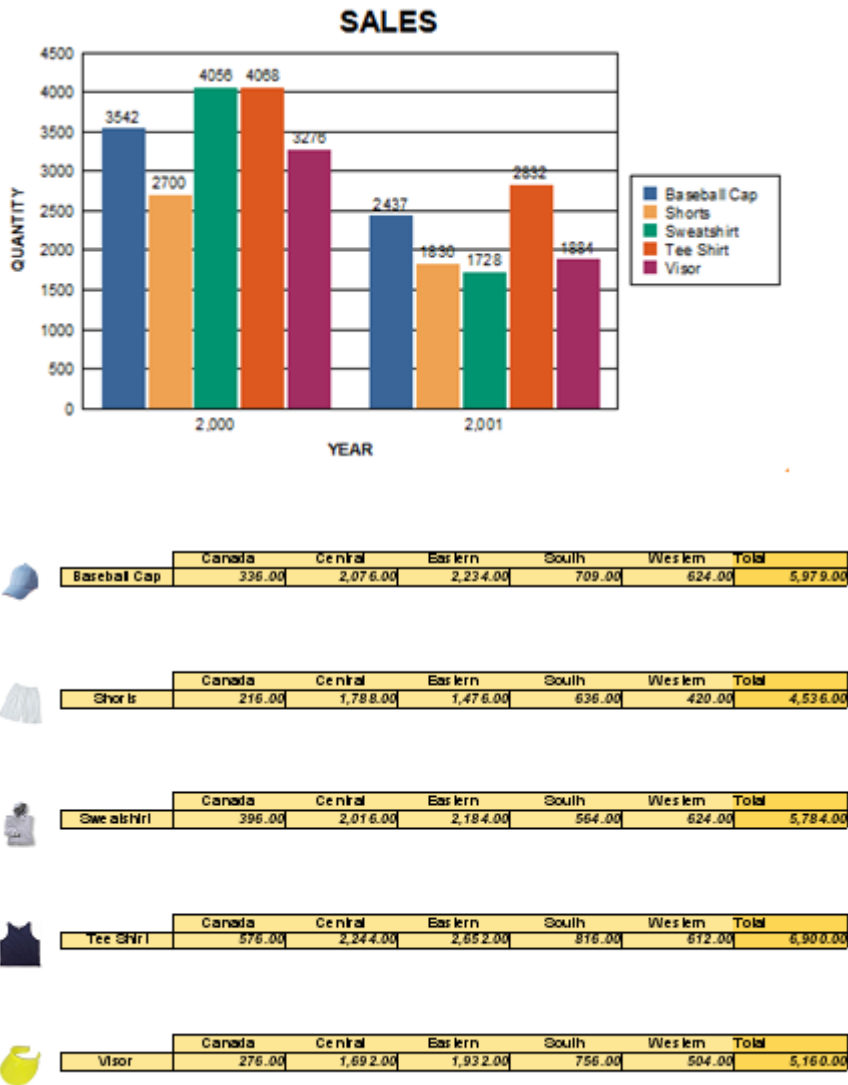


Figure 28: Report with Cross Table

### Creating a Pie Chart Showing Overall Sales of the Products

- To conclude the report, let's add a **pie chart** showing the overall sales in the report footer.
- Choose **Pie Chart** from the **Type** tab of **Chart Expert** and check **Use depth effect**.

- In the **Data** tab, select the data to be displayed. Select **Products.Name** in the **On change of** field and **Products.Quantity** in the **Show values** field.

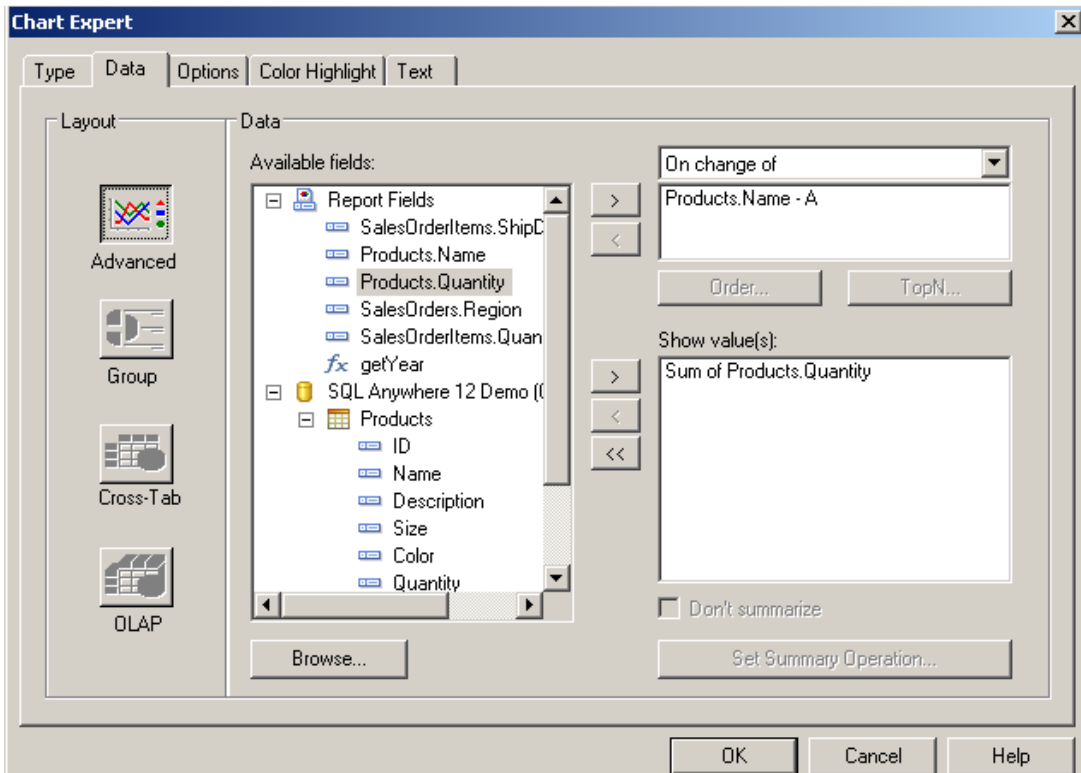


Figure 29: Creating a Pie Chart

- Click **OK** to create the chart. Crystal Reports generates the following chart at the end of the report:

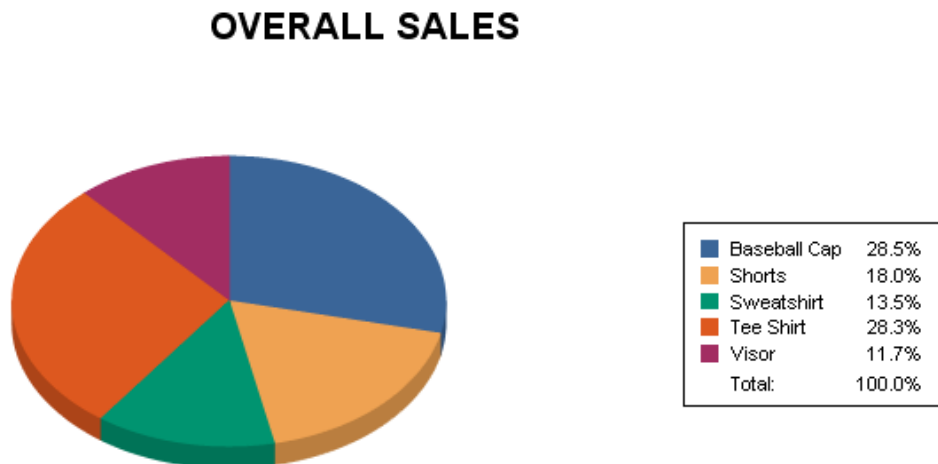


Figure 30: Crystal Report generated pie chart

## UPDATING CRYSTAL REPORTS DATA WHEN THE DATA IN DATABASE CHANGES

When data in the database changes, Crystal Reports can easily refresh its data.

Click **Report ► Refresh Report Data (F5)**. Click **OK** to the prompt. This will keep the report up to date. When the report is refreshed, Crystal Reports starts the database server locally and retrieves the most recent data.



## **CONCLUSION**

SQL Anywhere data can easily be displayed using Crystal Reports. Crystal Reports provides a compelling tool to perform analysis and helps to visualize data through the use of charts, graphs and what-if scenarios. Combining SQL Anywhere and Crystal Reports allows developers to create powerful database-driven applications that incorporate a world-class reporting engine.

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